CHAPTER IV

VARIEITIES AND FORMS OF PEPPER

MALABAR BLACK PEPPER

When black pepper is the end product, the colour, outward appearance and flavour are very important. The largest amount of pepper is consumed in this form. For black pepper, the berries are picked while still immature and dried. The entire berry is used for this kind of spice. As the berries dry, the skin wrinkles and turns black. When ground, the pepper corns give a powder of light and dark particles - a combination of the dark skin and light coloured core.

A major portion of the world's black pepper comes from the South-Western shore of India, known as the Malabar coast. The pepper from the Southern Districts of Kerala is generally called "Malabar" while the pepper of the Northern Malabar coast is known as Tellicherry Pepper. The former is highly aromatic with a distinctive fruity bouquet. There are chemical properties responsible for its excellent aroma, flavour and pungency. As with the Tellicherry Black Pepper,
in addition to possessing the excellent flavour and pungency properties noted above in Malabar Pepper, it is characterised by what the pepper trade calls "bold" berries—large, very regular and good looking specimens. Both Malabar and Tellicherry peppers are marketed only as Black Pepper. The odour quality of pepper is also an important consideration. This depends not only on the amount of oil present, but also on the constitutional make up of the oil.

LAMPONG BLACK PEPPER

Pepper grown in Indonesia is named after the Lampong district of south-eastern Sumatra wherein its cultivation is centred. It is quite uniform in its properties. This pepper compares with Malabar in pungency and flavour. The berries are small and thin shelled and are suitable for machine decortication. Ground lampong black pepper is relatively light in colour. Sarawak of the Federation of Malaysia, along the north-western coast of Borneo is the home of Sarawak Black Pepper. Ground Sarawak Black Pepper is a very light coloured product, mild in flavour, low in volatile oil, non-volatile ether extract and Methylene Chloride extract. Brasil is the latest producer of Black Pepper. It has a relatively smooth surface and a characteristic appearance. The outer skin is black and the centre of the berry very white. This causes a sharp black and white contrast in the appearance of the ground pepper. It is low in steam volatile oil and non-volatile Methylene Chloride
extract and its flavour characteristics makes this pepper less desirable than the Tellicherry Malabar and Lampong varieties.

**WHITE PEPPER**

It is estimated that the world trade in white pepper is about 6 to 8 thousand tonnes. Sarawak, Muntok and Brazilian white peppers are well-known in world pepper trade. This product is specially used in the production of those items where black particles are not desirable. White pepper is also being used in some European countries and is preferred for its mild flavour. It also gives a finer ground due to higher starch content. Traditionally white pepper is made from red ripe or nearly ripe pepper fruits as compared to black berries. This makes it easier to remove the skin. After they are picked at the ripening stage, these mature berries are soaked in water for 2 - 3 days to loosen the skin and then rubbed to remove it entirely. The cores are then washed and dried in the sun. Yields of about 22 per cent dry product on the weight of fresh berries are obtained. It is also possible to produce a white type of pepper from dried black pepper corns by removing the skin in a machine. This is known as "Decorticated Black Pepper". It can be used interchangeably with white pepper from a colour standpoint, but in flavour, it is more reminiscent of Black pepper. The Indian berries are not easily husked or decorticated.
Harvesting ripe pepper is a problem, since the soft fruits drop off from the spikes or will be eaten by birds. Hence, in some places, fully mature, but still green pepper is harvested and soaked in running water for about a week and subsequently treated the same way as ripe pepper. Some varieties of pepper grown in the Far Eastern countries are said to give black pepper with easily removable husks. Dehulling such black pepper would be an easy and an year-round process for making white pepper. Recently, Central Food Technological Research Institute, Mysore has developed a new type of white pepper which has got the wrinkled skin still in tact. It is reported that it resembles black pepper, except for colour. On grinding, it gives a light coloured powder, just like the traditional white pepper powder. The aroma is much superior to the odour of many white pepper samples and the microbial is minimum. However, it does not have the smooth creamy appearance of white pepper made from ripe fruits. The economic advantage of this new process is that a higher yield is obtained (about 28 per cent of green pepper) compared to the traditional yield (22 per cent). It is claimed that this process is fairly simple, capable of being adopted by even small growers.

MUNTOK WHITE PEPPER

Muntok White Pepper has its own characteristic aroma and a relatively mild flavour. It is produced in the

island of Bangka which lies off the south-eastern coast of Sumatra. The entire crop traditionally goes into white pepper production. White pepper is also produced in Brazil and in Sarawak. The Brazilian White Pepper when ground is lighter in colour and less pungent than Muntok White Pepper. The major share of Sarawak crop is normally reserved for white pepper. Pepper from Sri Lanka is characteristically high in volatile and non-volatile oil content which makes it favoured by the extraction industry.

PEPPER OIL AND OLEORESINS

This is the most appropriate place to describe the new technological advances which have been made in the last two decades in the field of pepper processing with oleoresins. An oleoresin is prepared from a spice or herb by extraction with a selected volatile, organic solvent after which the extracting medium is completely removed under vacuum, if permissible residual solvents are used. Oleoresins, therefore, differ from the corresponding oil in that a different method of preparation has been employed. This process results in a mixture of the essential oil, the organic soluble resins and the related materials present in the spice in combination with whatever non-volatile fatty oil the original spice or herb may contain, depending on the type of solvent used for extraction.
Oleoresins, therefore, contain all the flavouring principles present in the original spice or herb material. The constituents in the spice which are responsible for pungency are not present in the essential oil since they are not volatile; only the oleoresins which include these principles will provide the complete flavour effect. By their very nature oleoresins have built-in stability to high temperature applications. Oleoresins may be employed in food products by direct addition in proportion to its spice equivalent or replacement value.

In some cases, it is desirable to distribute the oleoresin product on the surface of a dry edible carrier. Any dry, edible material can be used for this purpose and the most commonly employed are salt and dextrose. Soya bean protein, starch, milk solids and the like may be used to distribute the oleoresin product. When ground spices or sodium nitrite is added with the oleoresin, it is commercially known as dry soluble seasoning. This concentrated dry soluble is then added to additional dry material which, after mixing, will result in the finished product.

THE ADVANTAGES OF OLEORESINS:

1. Uniformity of flavour:

The use of the extractives tends to minimise variations resulting from crop year to crop year and with the age of the raw material.
2. **Stability**

When natural spices are stored over a long period of time especially in the ground form, the volatile essential oil present is likely to be lost through evaporation or through polymerization and oxidation. When extracted, these effects are minimised, especially losses arising out of volatilization.

3. **Storage**

The equivalent flavouring of a large quantity of voluminous spice is usually obtained from a small container of the Oleoresin-type product.

4. **Microbiology**

Oleoresin-type products are not only bacteria-free but free from mould, fungus or other contaminants, sometimes found in the raw spices. Spices can be made bacteria-free, but it involves somewhat elaborate sterilization techniques.

5. **Economy**

Since the oleoresin carries with it the entire flavouring portion of a spice, there is no loss in its flavouring virtues which is not the case with spices, no matter how finely ground they are. Savings in transport cost, in storing space and in maintaining the flavour in tact result in considerable economies.
Oleoresins are not consumed in domestic kitchens and they are in demand from large-scale processors of food manufacturers in the developed countries. There are varieties and grades of oleoresins made and marketed in the developed countries. All these varieties and grades have been evolved over the last two decades. Every manufacturer has developed his own techniques for producing these varieties. The extractors in the developed countries, namely, U.S.A., Canada, West Germany, Britain and Japan, have been offering certain organoleptic qualities to the flavour of food manufacturers. By virtue of the fact that the variety of spices and the processing conditions are different in the spice producing countries, the organoleptic qualities of the oleoresins, namely the flavour and odour, are bound to be different from the flavour and odour of oleoresins produced in the developed countries. The foreign consumer, who is very particular of the quality of his product will be satisfied only with that quality and grade of oleoresins with specific characteristics and properties. The manufacturers of oleoresins in the developed countries are better placed in this regard in as much as they can offer tailor-made products based on their own research and development. It is also an important factor that the supplies like solvent, fuel and chemicals are more expensive in spice producing countries, although spices are cheaper than they are in the developed countries. At present, the market for oleoresins has been tapped by the extractors in the consuming countries. Hence
the newly installed plants in the spices producing countries have to compete with the established units in the oleoresin consuming countries.

The extent to which oleoresins are used in the food industries of importing countries and the speed at which the change from natural spices to spice extracts takes place are the two important factors that are likely to determine the future of pepper economy. Simply by switching from natural ground pepper to oleoresin, the pepper requirements of the food industry might be cut off considerably. If it is assumed that each tonne of oleoresin when dispersed on a suitable base, can be used to replace 16 tonnes of ground spice due to the greater availability of flavour than in the ground product, in order to produce the flavour/pungency equivalent of 1000 tonnes of pepper, only 62.5 tonnes of oleoresins will be needed (i.e. 1000 divided by 16). But only 500 tonnes of pepper will be needed from which to extract it.

In spite of all these advantages enjoyed by oleoresins, oleoresin extraction presents a number of problems in the world pepper economy. There are varieties and grades of oleoresins made and marketed by the oleoresin extraction industry in the developed countries. Every manufacturer has his own techniques for producing these varieties and each one enjoys his own market. The extent to which oleoresins are used in the food industries of importing countries and
the speed at which change from natural spices to spice extracts takes place cannot be reasonably estimated. Any attempt to quantify these changes even after giving a due weightage will be based on the subjective impressions of the investigator. In many of the important pepper consuming countries like United States, United Kingdom, Federal Republic of Germany and Italy, the rate of population increase has been declining steadily and significantly over the past few years.

Different situations exist in each importing country in terms of the structure of its trade, its national preferences and forms of pepper utilisation. Thus for example, in the United Kingdom, Lampeng light pepper are favoured by oleoresin extractors, since it gives the best yield, weight for weight. If an oleoresin is required for dispersing on a rusk base as is the case in Italy, Indian pepper, particularly the highly priced Tellicherry Extra Bold, is preferred. Scandinavian countries show a preference for Indonesian Muntok. The bland and yet characteristic flavour of Brasil pepper seems to be appreciated in the United States. Though its flavour is not favoured in the United Kingdom it is widely used to blend with and lighten other ground peppers. Infrequent supplies of white pepper from China are well received in the United Kingdom for its flavour, appearance, cleanliness and above all, competitive prices. Though quality and source of the material are important factors, the dominant and increasingly important consideration in the determining
the quantities of particular types of pepper shipped to almost any given market of the world is price. In addition to considerations of appearance, the chemical properties of pepper are gaining importance in recent years, since the flavour of pepper is dependent on two factors, the volatile oil responsible for the spicy odour and piperine, the alkaloid responsible for the biting taste.

GREEN PEPPER

Of late, there has been a growing demand for canned or bottled tender green pepper from countries like Japan and U.S.A. The canned, bottled and bulk packaged green pepper in 35 litre PVC Jerry Cans fetch about 6 - 10 times the price of normal black pepper and hence there appears to be quite a bright future for it as a relatively new venture in spice technology. Thus, processing of tender green pepper is quite a promising line in spice technology. Its prospects can further improve, if the season of availability of green pepper could be extended to 4 - 6 months by developing suitably early, mid and late season varieties of pepper low in piperine and starch content.

During the year 1973-74, India exported 10.82 tonnes of canned pepper valued at Rs.96,000. Exports in 1974-75 amounted to 10.366 tonnes valued at Rs.1,66,500. During the year 1975-76, India exported 96.89 tonnes of
canned green pepper valued at Rs.1.098 million. U.S.A., U.K., Belgium, Netherlands, France, West Germany, Finland, Denmark, Newzealand and Japan are the important importers of this item. In 1976-77 the export of this item reached the level of 175 tonnes valued at Rs.2.1 million. Dehydrated green pepper is another new venture in the export trade of pepper. It is reported that during the year 1976-77 India exported 59.84 tonnes of dehydrated green pepper valued at Rs.3.538 million. Of the total exports of this new item West Germany alone absorbed 54.4 tonnes followed by France with 3.5 tonnes.

**PEPPER AND PEPPER POWDER IN CONSUMER PACKAGES:**

With the increase in world travel and people living either temporarily or permanently in foreign countries, food habits of the people have undergone considerable changes. One of the major components of the demand for pepper is the household demand for it as a condiment. Broadly speaking, the consumption of pepper may fairly be equally divided between the household and institutional sectors, since consumption-at-home statistics are not available. This shows the scope for exporting pepper in consumer packing.

The advantages of exporting in retail packing are that by establishing a brand name, an exporter creates a steadier and continued demand for his product whereas in bulk he is at the mercy of the commodity buyer, to whom price seems to be the primary consideration and which makes him
switch his buying from one country to another. Retail packing may also be instrumental in securing an increase in unit value of the commodity exported. With large supplies available for export and the advantage that labour is cheap compared to the developed countries, the potential for exporting pepper in consumer packing are enormous. These advantages are, however, partly lost due to the fact that packing materials acceptable to the consumers in overseas markets are very expensive. Other problems in exporting pepper in consumer packages are the following:

1. Presence of well established repacking houses in most of the developed countries with a vast network of branches.

2. Lack of distribution channels.

3. Tariff Barriers.

In order to overcome these difficulties, a strategy that would put one in competition with marketing companies overseas, keeping in mind the consumer's requirements and specifications, has to be worked. Creation of seller-buyer understanding, collaboration with foreign firms in respect of marketing and distribution channels may also be considered to solve the marketing problem. Exporters trying to pioneer the export of pepper in retail packages deserve all encouragements by way of giving import entitlement for packaging materials and other benefits.